

## 6202.0 - Labour Force, Australia, Dec 2017

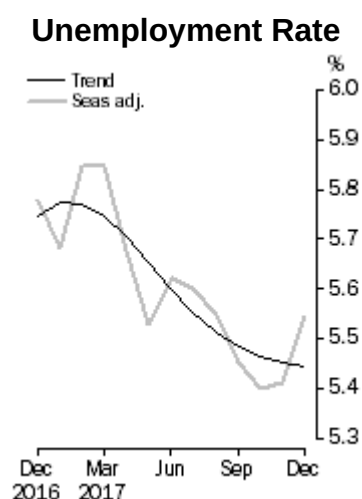
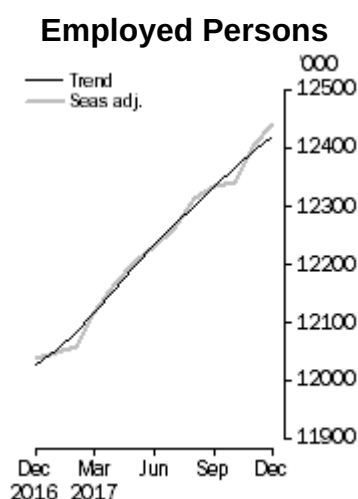
Previous ISSUE Released at 11:30 AM (CANBERRA TIME) 18/01/2018

## Summary

### Main Features

#### DECEMBER KEY FIGURES

	Nov 2017	Dec 2017	Nov 17 to Dec 17	Dec 16 to Dec 17
<b>Trend</b>				
Employed persons ('000)	12 394.8	12 419.8	25.0	3.3%
Unemployed persons ('000)	714.9	715.0	0.1	-2.5%
Unemployment rate (%)	5.5	5.4	0.0pts	-0.3pts
Participation rate (%)	65.5	65.5	0.1pts	0.9pts
<b>Seasonally Adjusted</b>				
Employed persons ('000)	12 406.1	12 440.8	34.7	3.3%
Unemployed persons ('000)	710.1	730.6	20.5	-1.0%
Unemployment rate (%)	5.4	5.5	0.1pts	-0.2pts
Participation rate (%)	65.5	65.7	0.2pts	0.9pts



#### DECEMBER KEY POINTS

#### TREND ESTIMATES (MONTHLY CHANGE)

- Employment increased 25,000 to 12,419,800.
- Unemployment increased 100 to 715,000.
- Unemployment rate decreased by less than 0.1 pts to 5.4%.

- Participation rate remained steady at 65.5%.
- Monthly hours worked in all jobs increased 4.0 million hours (0.2%) to 1,738.4 million hours.

## SEASONALLY ADJUSTED ESTIMATES (MONTHLY CHANGE)

- Employment increased 34,700 to 12,440,800. Full-time employment increased 15,100 to 8,518,900 and part-time employment increased 19,500 to 3,921,800.
- Unemployment increased 20,500 to 730,600. The number of unemployed persons looking for full-time work increased 9,900 to 501,800 and the number of unemployed persons only looking for part-time work increased 10,600 to 228,800.
- Unemployment rate increased 0.1 pts to 5.5%
- Participation rate increased by 0.2 pts to 65.7%.
- Monthly hours worked in all jobs decreased 4.2 million hours (0.2%) to 1,736.4 million hours.

## NOTES

### FORTHCOMING ISSUES

#### ISSUE

January 2018  
February 2018  
March 2018  
April 2018  
May 2018  
June 2018

#### Release Date

15 February 2018  
22 March 2018  
19 April 2018  
17 May 2018  
14 June 2018  
19 July 2018

## ROUNDING

Estimates of changes shown on the front cover and used in the commentary have been calculated using unrounded estimates, and may be different from, but are more accurate than, movement obtained from the rounded estimates. The graphs on the front cover also depict unrounded estimates.

## SAMPLING ERROR

The estimates in this publication are based on a sample survey. Published estimates and movements are subject to sampling variability. Standard errors give a measure of sampling variability. The interval bounded by two standard errors is the 95% confidence interval, which provides a way of looking at the variability inherent in estimates. There is a 95% chance that the true value of the estimate lies within that interval.

## MOVEMENTS IN SEASONALLY ADJUSTED SERIES BETWEEN NOVEMBER 2017 AND DECEMBER 2017

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Monthly change	95% Confidence interval
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Total Employment	34 700	-25 500	to	94 900
Total Unemployment	20 500	-16 700	to	57 700
Unemployment rate	0.1 pts	-0.1 pts	to	0.3 pts
Participation rate	0.2 pts	-0.2 pts	to	0.6 pts

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## INQUIRIES

For further information about these and related statistics, email [<client.services@abs.gov.au>](mailto:client.services@abs.gov.au) or contact the National Information and Referral Service on 1300 135 070.

# Labour Force Commentary December 2017

## LABOUR FORCE COMMENTARY DECEMBER 2017

### NATIONAL ESTIMATES

#### TREND ESTIMATES

Australia's trend estimate of employment increased by 25,000 persons in December 2017, with:

- the number of unemployed persons increasing by 100 persons;
- the unemployment rate decreasing by less than 0.1 percentage points to 5.4 per cent;
- the participation rate remaining steady at 65.5 per cent; and
- the employment to population ratio increasing to 62.0 per cent.

Over the past year, trend employment increased by 393,400 persons (or 3.3 per cent). Over the same 12 month period the trend employment to population ratio, which is a measure of how employed the population (aged 15 years and over) is, increased by 1.0 percentage points to 62.0 per cent, the highest rate since October 2011.

In monthly terms, trend employment increased by 25,000 persons between November and December 2017. This represents an increase of 0.20 per cent, which is above the monthly average growth rate over the past 20 years of 0.16 per cent.

Trend full-time employment increased by 16,600 persons in December, and part-time employment increased by 8,400 persons. Compared to a year ago, there are 321,600 more persons employed full-time and 71,800 more persons employed part time. The part-time share of employment decreased 0.4 percentage points over the past 12 months, from 32.0 per cent to 31.5 per cent.

The trend estimate of monthly hours worked in all jobs increased by 4.0 million hours (or 0.23 per cent) in December 2017, to 1,738.4 million hours. Monthly hours worked increased by 3.6 per cent over the past year, slightly above the increase in employed persons. As a result, the average hours worked per employed person also increased slightly, to around 140.0 hours per month, or around 32.3 hours per week.

The trend unemployment rate decreased by less than 0.1 percentage points to 5.4 per cent in December 2017, after the November 2017 number was revised up to 5.5 per cent. The number of unemployed persons was largely unchanged, increasing by 100. The trend unemployment rate is now at its lowest point since January 2013.

The trend participation rate remained at 65.5 per cent in December 2017, after the November 2017 number was revised up, and remained at the highest point since March 2011. The trend female participation rate climbed to a further historical high of 60.4 per cent.

The labour force includes the total number of employed and unemployed persons. Over the past year, the labour force has increased by 375,000 persons (2.9 per cent). This rate of increase is above the rate of increase for the total Civilian Population aged 15 years and over (322,500 persons, or 1.6 per cent).

The trend participation rate for 15-64 year olds, which controls (in part) for the effects of an ageing population, remained steady at 77.9 per cent in December 2017. This is the highest rate recorded and indicates the 15-64 year old population is participating in the labour market at a record high level. The gap between male and female participation in this age range is now less than 10 percentage points, at 82.9 and 73.0 per cent, continuing the long term convergence.

The trend participation rate for 15-24 year olds remained steady for a third consecutive month at 67.3 per cent in December 2017. The unemployment rate for this group decreased by 0.1 percentage points to 12.2 per cent in December 2017 and decreased by 0.8 percentage points over the year.

The trend series smooths the more volatile seasonally adjusted estimates and provide the best measure of the underlying behaviour of the labour market.

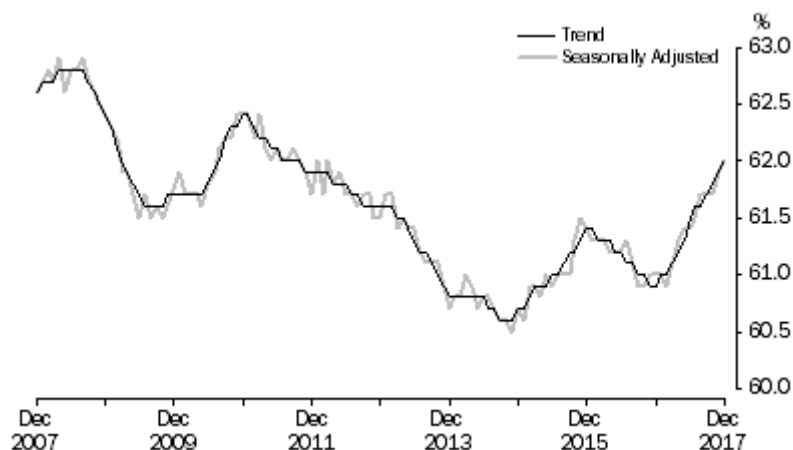
## **SEASONALLY ADJUSTED ESTIMATES**

Seasonally adjusted employment increased by 34,700 persons from November to December 2017. The underlying composition of the net change was an increase of 15,100 persons in full-time employment and a 19,500 increase in part-time employment. Since December 2016, full-time employment has increased by 303,400 persons, while part-time employment has increased by 99,700 persons.

Seasonally adjusted monthly hours worked in all jobs decreased by 4.2 million hours in December 2017 to 1,736.4 million hours. This follows an increase of 9.8 million hours from October to November.

The seasonally adjusted employment to population ratio increased 0.1 per cent to 62.0 per cent in December 2017, representing an increase of 1.0 percentage points from the same time last year.

**Graph 1, Employment to population ratio, Persons, December 2007 to December 2017**



The seasonally adjusted unemployment rate increased by 0.1 percentage points to 5.5 per cent in December 2017. The participation rate increased by 0.2 percentage points to 65.7 per cent.

## STATE AND TERRITORY ESTIMATES

### TREND ESTIMATES

In December 2017, increases in trend employment were observed in all states and territories except for South Australia where employment decreased by 200. The largest increases were in New South Wales (up 11,500 persons) and Victoria (up 5,600 persons).

Similarly, over the past year, increases in employment were also observed in all states and territories except Northern Territory (down 3,900 persons). The largest increases were in New South Wales (up 134,100), Queensland (up 108,900 persons) and Victoria (up 95,000 persons). The highest annual employment growth rates were in Queensland and Australian Capital Territory (4.6 per cent), followed by New South Wales (3.5 per cent).

An increase in the trend unemployment rate was seen in the Northern Territory (up 0.3 percentage points) and Western Australia (up 0.1 percentage points), while a decrease was recorded in the Australian Capital Territory (down 0.1 percentage points). The unemployment rate was unchanged in all other states.

The largest increase in the trend participation rate was in the Northern Territory (up 0.5 percentage points), followed by Australian Capital Territory (up 0.3 percentage points).

### SEASONALLY ADJUSTED ESTIMATES

In seasonally adjusted terms, the largest increase in employment was in New South Wales (up 14,300 persons), followed by Western Australia (up 6,100 persons). The largest decrease was observed in Victoria (down 3,900).

The largest increase in the seasonally adjusted unemployment rate was in Victoria (up 0.6 percentage points, after two consecutive falls in October and November), followed by Tasmania (up 0.4 percentage points). Western Australia recorded the largest decrease in the seasonally adjusted unemployment rate (down 0.9 percentage points, after two consecutive increases in October and November), followed by South Australia (down 0.2 percentage points).

The seasonally adjusted participation rate increased in Tasmania (up 0.4 percentage points) and also New South Wales and Victoria (both up 0.3 percentage points). The largest decrease was in Western Australia (down 0.3 percentage points).

Seasonally adjusted estimates are not published for the two territories.

**Table 1, Unemployment rate, States and Territories**

	Trend		Seasonally Adjusted	
	November	December	November	December
	%	%	%	%
New South Wales	4.7	4.7	4.6	4.8
Victoria	5.8	5.8	5.5	6.1
Queensland	5.9	5.9	5.9	6.0
South Australia	5.9	5.9	6.1	5.9
Western Australia	6.1	6.1	6.6	5.7
Tasmania	5.9	6.0	5.7	6.1
Northern Territory	4.9	5.2	np	np
Australian Capital Territory	3.9	3.7	np	np
Australia	5.5	5.4	5.4	5.5

np not available for publication but included in totals where applicable, unless otherwise indicated

## Insights from the Original Data

### INSIGHTS FROM THE ORIGINAL DATA

#### SAMPLE COMPOSITION

The Labour Force Survey sample can be thought of as comprising eight sub-samples (or rotation groups), with each sub-sample remaining in the survey for eight months, and one rotation group "rotating out" each month and being replaced by a new group "rotating in". This sample rotation is important in ensuring that seven-eighths of the sample are common from one month to the next, to ensure that changes in the estimates reflect real changes in the labour market, rather than the sample. In addition, the replacement sample is generally selected from the same geographic areas as the outgoing one, as part of a representative sampling approach.

When considering movements in the original estimates, it is possible to decompose the sample into three components:

- the matched common sample (survey respondents who responded in both November and December);
- the unmatched common sample (survey respondents who responded in December but who did not respond in November, or vice versa); and
- the incoming rotation group (survey respondents who replaced respondents who rotated out in November).

The detailed decomposition of each of these movements is included in the data cube 'Insights From the Original Data'.

In considering the three components of the sample, it is important to remember that the matched common sample describes the change observed for the same respondents in November and December, while the other two components reflect differences between the aggregate labour force status of different groups of people.

While the rotation groups are designed to be representative of the population, the outgoing and incoming rotation groups will almost always have somewhat different characteristics, as a result of the groups representing a sample of different households and people. The design of the survey, including the weighting and estimation processes, ensures that these differences are generally relatively minor and seeks to ensure that differences in characteristics of rotation groups do not affect the representativeness of the survey and its estimates. Monthly estimates are always designed to be representative of their respective months, regardless of the relative contribution of the three components of the sample.

### **INCOMING ROTATION GROUP**

In original terms, the incoming rotation group in December 2017 had a higher employment to population ratio than the group it replaced (61.8 per cent in November, up to 63.3 per cent in December 2017), and was higher than the ratio for the entire sample (62.7 per cent).

The full-time employment to population ratio of the incoming rotation group was higher than the group it replaced (43.1 per cent in November 2017 and up to 44.1 in December 2017), and higher than the ratio for the entire sample (43.2 per cent).

The unemployment rate of the incoming rotation group was 0.5 percentage points lower than the whole sample (4.9 per cent, compared to 5.4 per cent), and it replaced a group with a higher rate (5.0 per cent in November). Its participation rate was above that of the sample as a whole (66.5 per cent, compared to 66.2 per cent), and also above the group it replaced (65.0 per cent in November).

### **OUTGOING ROTATION GROUP**

In looking ahead to the January 2018 estimates, the outgoing rotation group in December 2017, which will be replaced by a new incoming rotation group in January 2018, has a lower employment to population ratio (60.7 per cent in December 2017) compared to the sample as a whole (62.7 per cent). The full-time employment to population ratio (41.9 per cent) is lower than the ratio for the entire sample (43.2 per cent).

In original terms, the unemployment rate for the outgoing rotation group in December 2017 is lower than the sample as a whole (5.0 per cent, compared to 5.4 per cent). The participation rate for the outgoing rotation group in December 2017 is 63.9 per cent, which is lower than the rate for the whole sample (66.2 per cent).

### **THE IMPORTANCE OF TREND DATA**

As the gross flows and rotation group data are presented in original terms they are not directly comparable to the seasonally adjusted and trend data discussed elsewhere in the commentary, and are included to provide additional information for the original data. Since the original data are unadjusted, they have a considerable level of inherent sampling

variability, which is specifically adjusted for in the trend series. The trend data provide the best measure of the underlying behaviour of the labour market and are the focus of the commentary in this publication.

## Article Archive

This section provides an archive of articles and analysis published in Labour Force, Australia (cat. no. 6202.0) and Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003), promoting the effective use of labour force statistics. Articles are sorted by publication month.

Articles on labour related topics are also available in Australian Labour Market Statistics (cat. no. 6105.0) and Australian Social Trends (cat. no. 4102.0).

### LABOUR FORCE SURVEY ARCHIVE

#### 2017

##### November

What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

##### October

What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

Major Rebenchmarking of Labour Force Series (cat. no. 6202.0.55.003)

##### September

What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

Labour Force Explained

##### August

Labour Force Pivot Tables (cat. no. 6291.0.55.001)

##### July

Labour Force Pivot Tables (cat. no. 6291.0.55.001)

##### June

What's New in the Labour Force (cat. no. 6202.0)

Labour Force Pivot Tables (cat. no. 6291.0.55.001)

##### April

Online Collection in the Labour Force Survey (cat. no. 6202.0, cat. no. 6291.0.55.001)

Labour Force Pivot Tables (cat. no. 6291.0.55.001)

##### March

Annual Seasonal Re-analysis (cat. no. 6202.0, cat. no. 6291.0.55.001)

##### February

Changes to Filter Lengths used in Labour Statistics (cat. no. 6202.0, cat. no. 6291.0.55.001)

What's New in the Labour Force (cat. no. 6291.0.55.003)



## **2016**

### **November**

Spotlight on Underemployment (cat. no. 6202.0)

Labour Force Pivot Tables (cat. no. 6291.0.55.003)

### **September**

Labour Force Pivot Tables (cat. no. 6291.0.55.001)

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What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

Online Collection In The Labour Force Survey (cat. no. 6202.0)

Expanded Education data from the Labour Force Survey (cat. no. 6291.0.55.003)

### **July**

What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

Revisions to Monthly hours worked in all jobs (cat. no. 6202.0)

Advice on Reporting Regional Labour Force Data (cat. no. 6291.0.55.001)

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What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

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What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

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Update on Recommendation 7 from the Independent Technical Review (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

Measures of Underemployment and Underutilisation (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

Measures of full-time, part-time job search (cat. no. 6291.0.55.001)

Measures of leave entitlements (cat. no. 6291.0.55.003)

Measures of current duration of employment (cat. no. 6291.0.55.003)

Volume measures of underutilisation (cat. no. 6291.0.55.003)

Measures of retrenchment (cat. no. 6291.0.55.003)

Measures of sector of main job (cat. no. 6291.0.55.003)

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Progress with recommendations from the Independent Technical Review (cat. no. 6202.0, cat. no. 6291.0.55.001)

Change to Status in Employment Output (cat. no. 6202.0, cat. no. 6291.0.55.001)

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What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

Assessing Volatility in the Labour Force Series (cat. no. 6291.0.55.001)

Update on Recommendations 10 and 11 from the Independent Technical Review (cat. no. 6202.0, cat. no. 6291.0.55.001)

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What's New in the Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

Update on Recommendation 7 from the Independent Technical Review (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

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Rebenchmarking Labour Force Estimates (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

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What's new in the Labour force (cat. no. 6202.0, cat. no. 6291.0.55.001)

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Independent Technical Review into the Labour Force Survey and ABS Response (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

## **October**

Removing the effect of Supplementary Surveys from seasonally adjusted estimates (cat. no. 6202.0, cat. no. 6291.0.55.001)

## **September**

Changes in this and upcoming labour force issues (cat. no. 6202.0, cat. no. 6291.0.55.001)

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Analysis of changes to Labour Force Regional Estimates (cat. no. 6291.0.55.003)

Rebenchmarking Labour Force Estimates to the 2011 Census of Population and Housing (cat. no. 6291.0.55.003)

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Rebenchmarking Labour Force Estimates to the 2011 Census of Population and Housing (cat. no. 6202.0)

Analysis of changes to Labour Force Regional Estimates (cat. no. 6291.0.55.001)

# **2013**

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Understanding the Australian Labour Force using ABS statistics (cat. no. 6202.0)

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What's new in the Labour Force (cat. no. 6202.0)

Understanding full-time/part-time status in the Labour Force Survey (cat. no. 6202.0)

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What's new in the Labour Force (cat. no. 6202.0)

Fact Sheet Did You Know - Underemployment (cat. no. 6202.0)

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Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

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What's New in the Labour Force (cat. no. 6291.0.55.003)  
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#### **April**

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6291.0.55.001)

ABS Response to recent concerns expressed about employment estimates (cat. no. 6202.0)

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

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Annual Seasonal Reanalysis (cat. no. 6202.0)

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

### **February**

Exploring Labour Force Data on joblessness (cat. no. 6202.0)

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Employment level estimates versus employment to population explained (cat. no. 6202.0)

## **2011**

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Aggregate monthly hours worked, Trend estimates (cat. no. 6202.0)

Underemployment rate, Trend estimates (cat. no. 6202.0)

Labour force underutilisation rate, Trend estimates (cat. no. 6202.0)

### **February**

Historical Revisions (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

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Impact of the floods on the Labour Force Survey (cat. no. 6202.0, cat. no. 6291.0.55.001)

Employed Persons, Trend estimates (cat. no. 6202.0)

Unemployed Persons, Trend estimates (cat. no. 6202.0)

## **About this Release**

Summary results of the monthly Labour Force Survey containing estimates of employed and unemployed persons classified by sex, full-time/part-time status, states and territories and some age groups; and persons not in the labour force.

# **Explanatory Notes**

## **Explanatory Notes**

### **EXPLANATORY NOTES**

## INTRODUCTION

**1** This publication contains estimates of the civilian labour force derived from the Labour Force Survey component of the Monthly Population Survey. The full time series for estimates from this publication are also available electronically. More detailed estimates are released one week after this publication in various electronic formats - see *Labour Force, Australia, Detailed - Electronic Delivery* (cat. no. 6291.0.55.001) and *Labour Force, Australia, Detailed, Quarterly* (cat. no. 6291.0.55.003).

## CONCEPTS, SOURCES AND METHODS

**2** The conceptual framework used in Australia's Labour Force Survey aligns closely with the standards and guidelines set out in Resolutions of International Conferences of Labour Statisticians. Descriptions of the underlying concepts and structure of Australia's labour force statistics, and the sources and methods used in compiling the estimates, are presented in *Labour Statistics: Concepts, Sources and Methods* (cat. no. 6102.0.55.001) which is available on the ABS website <<https://www.abs.gov.au>>.

## LABOUR FORCE SURVEY

**3** The Labour Force Survey is based on a multi-stage area sample of private dwellings (currently approximately 26,000 houses, flats, etc.), a list sample of non-private dwellings (hotels, motels, etc.), and covers approximately 0.32% of the civilian population of Australia aged 15 years and over.

**4** Information is obtained from the occupants of selected dwellings by specially trained interviewers using computer-assisted interviewing, or self-completion online.

**5** Households selected for the Labour Force Survey are interviewed each month for eight months, with one-eighth of the sample being replaced each month. The first interview is generally conducted face-to-face. Subsequent interviews are conducted by telephone (if acceptable to the respondent).

**6** From December 2012 to April 2013, the ABS conducted a trial of online electronic data collection. Respondents in a single rotation group (i.e. one-eighth of the survey sample) were offered the option of self completing their labour force survey questionnaire online instead of via a face-to-face or telephone interview. From May 2013, the ABS expanded the offer of online electronic collection to 50% of each new incoming rotation group. For more information see the article in the April 2013 issue of this publication. From September 2013, online electronic collection has been offered to 100% of private dwellings in each incoming rotation group. From April 2014, 100% of private dwellings are being offered online electronic collection.

**7** The interviews are generally conducted during the two weeks beginning on the Sunday between the 5th and 11th of each month. The information obtained relates to the week before the interview (i.e. the reference week). Each year, to deal with the operational difficulties involved with collecting and processing the Labour Force Survey around the Christmas and New Year holiday period, interviews for December start four weeks after November interviews start (i.e. between the 3rd and 9th December), and January interviews start five weeks after December interviews start. As a result, January interviewing may commence as early as the 7th or as late as the 13th, depending on the year. Occasionally, circumstances that present significant operational difficulties for survey collection can result in a change to the normal pattern for the start of interviewing.

**8** Estimates from the Labour Force Survey are usually published first in this publication 39 days after the commencement of interviews for that month, with the exception of estimates for each December which are usually published 46 days after the commencement of interviews.

## **SCOPE OF SURVEY**

**9** The Labour Force Survey includes all persons aged 15 years and over except members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.

## **COVERAGE**

**10** In the Labour Force Survey, coverage rules are applied which aim to ensure that each person is associated with only one dwelling, and hence has only one chance of selection. The coverage rules are necessarily a balance between theoretical and operational considerations. Nevertheless, the chance of a person being enumerated at two separate dwellings in the survey is considered to be negligible.

## **POPULATION BENCHMARKS**

**11** The Labour Force Survey estimates are calculated in such a way as to add to independent estimates of the civilian population aged 15 years and over (population benchmarks). These population benchmarks are based on the most recently released estimates of Final, Revised and Preliminary quarterly Estimated Resident Population (ERP). For information on the methodology used to produce the ERP see *Australian Demographic Statistics* (cat. no. 3101.0). Since the most recently released ERP estimates lag the current time period for Labour Force estimates by nine months, the Labour Force population benchmarks are created by projecting forward three quarters past the most recently released quarterly ERP estimates. The projection is based on the historical pattern of each population component - births, deaths, interstate migration and net overseas migration (NOM). Projected estimates of NOM are supplemented with other data sources to better forecast population changes in the short-term. The main data source are the forecasts published by the Department of Immigration & Border Protection in the publication *The Outlook for Net Overseas Migration*.

**12** Commencing in March 2010, the ERP series has been revised twice-yearly, in the March and September quarter issues of *Australian Demographic Statistics* (cat. no. 3101.0). This biannual revision cycle incorporates more up to date information available for NOM. This updated information is included in the population benchmarks used in creating the Labour Force estimates when they are rebenchmarked quarterly.

**13** Every five years, the ERP series are revised to incorporate additional information available from the latest Census of Population and Housing (Census). Labour Force Survey population benchmarks, and the estimates, are revised following this five-yearly revision in the ERP. The process of incorporating the revised population benchmarks is referred to as 'rebasings'. From the January 2014 issue of this publication, labour force estimates have been compiled using population benchmarks based on the results of the 2011 Census. Revisions were made to historical Labour Force estimates from June 2006 to December

2013. In addition, estimates from July 1991 to May 2006 were revised to reflect population benchmarks based on ERP revised following the 2011 Census. The next rebasing based on the Census will be following the release of the 2016 Census-based ERP estimates, which will incorporate revisions back five years. For more information on revised ERP estimates, refer to the June 2012 issue of *Australian Demographic Statistics* (cat. no. 3101.0) released in December 2012.

**14** In between Censuses, the ABS revises the Labour Force population benchmarks using the latest ERP according to the paragraphs above. These were introduced in the July 2010, November 2012 and April 2013 issues. The revisions planned for the October 2013, April 2014 and November 2014 issues were not implemented (see *What's New in the Labour Force* in the September 2013 issue and *Changes in this Issue* in the October 2014 issue of this publication). From the February 2015 issue, rebenchmarking were undertaken quarterly in the February, May, August and November issues, apart from May 2015. For more information, refer to the article *Rebenchmarking of Labour Force Series* in the February 2015 issue of this publication.

## ESTIMATION METHOD

**15** The estimation method used in the Labour Force Survey is Composite Estimation, which was introduced in May 2007. In January 2014 composite estimation was applied to all estimates from July 1991 as part of the 2011 Census rebenchmarking. Composite Estimation combines data collected in the previous six months with current month's data to produce the current month's estimates, thereby exploiting the high correlation between overlapping samples across months in the Labour Force Survey. The Composite Estimator combines the previous and current months' data by applying different factors according to length of time in the survey. After these factors are applied, the seven months of data are weighted to align with current month population benchmarks. For details see *Information Paper: Forthcoming Changes to Labour Force Statistics, 2007* (cat. no. 6292.0).

## COMPARABILITY OF SERIES

**16** From April 1986, the definition of employed persons was changed to include persons who worked without pay between 1 and 14 hours per week in a family business or on a farm (i.e. contributing family workers). For further information, see paragraphs 22 and 23 of the Explanatory Notes in the February 2003 issue of *Labour Force, Australia* (cat. no. 6203.0).

**17** The ABS introduced telephone interviewing into the Labour Force Survey in August 1996. Implementation was phased in for each new sample group from August 1996 to February 1997. During the period of implementation, the new method produced different estimates than would have been obtained under the old methodology. The effect dissipated over the final months of implementation and was no longer discernible from February 1997. The estimates for February 1997 and onwards are directly comparable to estimates for periods prior to August 1996. For further details, see the feature article in the June 1997 issue of *Labour Force, Australia* (cat. no. 6203.0).

**18** From April 2001 the Labour Force Survey was conducted using a redesigned questionnaire containing additional data items and some minor definitional changes. The definition of unemployed persons was changed to include all persons who were waiting to start work and were available to start in the reference week. This change was introduced in February 2004, when historical unit record data were revised from April 2001 to January 2004. This revision created a small trend break at April 2001 in unemployed persons and unemployment rate series. For further details, see *Information Paper: Forthcoming Changes*



to *Labour Force Statistics, 2003* (cat. no. 6292.0), released in December 2003. From July 2014 the Labour Force Survey questionnaire was further redesigned and definitional changes made to active job search steps and duration of job search. For further details, see the Glossary and *Information Paper: Forthcoming Changes to Labour Force Statistics, June 2014* (cat. no. 6292.0), released in October 2014.

**19** Core labour force series were revised in April 2001 for the period April 1986 to March 2001 for the remaining definitional changes introduced with the redesigned questionnaire, to reduce the impact of the changes on labour force series. For further details, see *Information Paper: Implementing the Redesigned Labour Force Survey Questionnaire* (cat. no. 6295.0) and the 2004 issue of *Information Paper: Questionnaires Used in the Labour Force Survey* (cat. no. 6232.0).

**20** In May 2007, an improved method of estimation, known as composite estimation, was introduced into the Labour Force Survey. In introducing this change, the ABS revised unit record data from April 2001 to April 2007 based on the new estimation method. No change was identified in the trend breaks in the unemployed persons and unemployment rate series which arose with the introduction of a redesigned survey form in April 2001 (as noted above in paragraph 18). In January 2014 composite estimation was applied to all estimates from July 1991 as part of the 2011 Census rebenchmarking. For further details, see *Information Paper: Forthcoming Changes to Labour Force Statistics, 2007* (cat. no. 6292.0).

**21** As one of a range of ABS savings initiatives for the 2008-09 financial year, there was a 24% reduction in the LFS sample size for the period July 2008 to August 2009, relative to the June 2008 sample size. The sample reduction was reversed from September 2009 to December 2009, with December 2009 estimates being the first produced under the fully reinstated sample.

## **LABOUR FORCE SURVEY SAMPLE**

**22** The current Labour Force Survey sample has been selected using information collected in the 2011 Census of Population and Housing.

**23** The sample was introduced over four months - May 2013 to August 2013. Two rotation groups (i.e. one-quarter of the survey sample) were introduced each month. During the sample phase-in, the increased sample rotation had an impact on the quality of estimates. Movement standard errors increased by approximately 10%, representing, for example, an increase on the standard error on the Australian monthly change in employment for May 2013 from 27,000 to approximately 29,700.

**24** Due to the use of composite estimation, there was a marginal impact on the quality of level estimates. Gross Flows analysis were impacted by the sample phase-in with between 60% to 70% of the sample available for matching between the current and previous months instead of the usual 80%. After full transition to the new sample, the quality of level and movement estimates is at the level designed for under the 2011 sample design and are of similar quality as the 2006 sample design. For further details, see *Information Paper: Labour Force Survey Sample Design* (cat. no. 6269.0) released on 30 May 2013.

## **RELIABILITY OF ESTIMATES**

**25** Two types of error are possible in an estimate based on a sample survey: sampling error and non-sampling error.

**26** Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors. Standard errors of key estimates for the latest month and of movements since the previous month of these estimates are shown in the standard errors section of this publication. Standard errors for other estimates and other movements may be calculated by using the spreadsheet contained in *Labour Force Survey Standard Errors, Data Cube* (cat. no. 6298.0.55.001) which is available free of charge on the ABS website <<https://www.abs.gov.au>>.

**27** Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Australian Labour Force Survey receives a higher level of co-operation from individuals in selected dwellings compared to other countries, with the average response rate over the past 3 years being 93 per cent, and the average rate over the past year being 92.5 per cent (to the nearest quarter of a per cent, in rounded terms). See Glossary for definition of response rate.

## **SEASONAL ADJUSTMENT AND TREND ESTIMATION**

**28** Any original time series can be thought of as a combination of three broad and distinctly different types of behaviour, each representing the impact of certain types of real world events on the information being collected: systematic calendar related events, short-term irregular fluctuations and long-term cyclical behaviour. A multiplicative decomposition model is applied in the seasonal adjustment of Labour Force Time Series, where the original time series (O) is considered as the product of the underlying trend (T), a systematic calendar related or seasonal component (S) and an irregular component (I). This can be expressed as  $O = T \times S \times I$ . The contributions of each of these behaviours varies from series to series, as well as throughout time for a given series, depending on the nature of the interactions of real world events and the data of interest.

**29** Seasonal adjustment is a statistical technique that attempts to measure and remove the effects of systematic calendar related patterns including seasonal variation to reveal how a series changes from period to period. Seasonal adjustment does not aim to remove the irregular or non-seasonal influences which may be present in any particular month. This means that month-to-month movements of the seasonally adjusted estimates may not be reliable indicators of trend behaviour.

**30** The Labour Force Survey uses the concurrent seasonal adjustment method to derive seasonal factors. Concurrent seasonal adjustment uses data up to the current month to estimate seasonal factors for the current and all previous months. This process can result in revisions each month to estimates for earlier periods. However, in most instances, the only noticeable revisions will be to the seasonally adjusted estimates for the previous month and one year prior to the current month. From the March 2015 issue of this publication, the effects of supplementary surveys are removed prior to the estimation of seasonal factors for key Labour Force series from February 1978 onwards. While this methodology has addressed short term volatility in the seasonally adjusted series arising from changes to the timing and content of the supplementary survey program, in general prior corrections and resulting changed seasonal patterns can be identified and measured to a more reliable degree of certainty after three successive observations (in this case after three years). For

further details refer to the October and December 2014 issues of this publication.

**31** The revision properties of the seasonally adjusted and trend estimates can be improved by the use of Autoregressive Integrated Moving Average (ARIMA) modelling. ARIMA modelling relies on the characteristics of the series being analysed to project future period data. The projected values are temporary, intermediate values, that are only used internally to improve the estimation of the seasonal factors. The projected data do not affect the original estimates and are discarded at the end of the seasonal adjustment process. The Labour Force Survey uses an ARIMA model for the majority of the individual time series. The ARIMA model is assessed as part of the annual reanalysis. For further details, see the feature article in the October 2004 issue of Australian Economic Indicators (cat. no. 1350.0).

**32** Seasonal adjustment is able to remove the effect of events which occur at the same time in the survey every year. However, there are some events, like holidays, which are not always at the same time in the survey cycle or which are not at the same time across Australia. The effects of these types of events on Labour Force Survey estimates cannot in all cases be removed, because the pattern of their effects cannot be determined. However, two events for which adjustment is made in the seasonally adjusted series are the January interview start date and the timing of Easter. For further details, see Information Paper: Forthcoming Changes to Labour Force Statistics (cat. no. 6292.0) released in December 2003.

**33** While seasonal factors for the complete time series are estimated each month, they will continue to be reviewed annually at a more detailed level to take into account each additional year's original data. This annual review will not normally result in significant changes to published estimates. The review is usually conducted early each year with the results released in this publication shortly thereafter.

**34** The smoothing of seasonally adjusted series to produce 'trend' series reduces the impact of the irregular component of the seasonally adjusted series. These trend estimates are derived by applying a 13-term Henderson-weighted moving average to all months except the last six. The last six monthly trend estimates are obtained by applying surrogates of the Henderson average to the seasonally adjusted series. Trend estimates are used to analyse the underlying behaviour of a series over time.

**35** While this smoothing technique enables estimates to be produced for the latest month, it does result in revisions in addition to those caused by the revision of seasonally adjusted estimates. Generally, revisions due to the use of surrogates of the Henderson average become smaller, and after three months have a negligible impact on the series.

**36** Trend estimates are published for the Northern Territory in table 10 and for the Australian Capital Territory in table 11. Unadjusted series for the two Territories have shown, historically, a high degree of variability, which can lead to considerable revisions to the seasonally adjusted estimates each month when seasonal factors are estimated. For this reason, seasonally adjusted estimates are not currently published for the two Territories. In addition, caution should be exercised in the interpretation of trend estimates for the two Territories, particularly for the three most recent months, where revisions may be relatively large.

**37** For further information, see A Guide to Interpreting Time Series - Monitoring Trends (cat. no. 1349.0).

## RELATED PUBLICATIONS

**38** Users may also wish to refer to the following publications and other data products that are available free of charge from the ABS website:

- Labour Force Survey Standard Products and Data Item Guide (cat. no. 6103.0)
- Labour Force, Australia, Detailed (cat. no. 6291.0.55.001)
- Labour Force, Australia, Detailed Quarterly (cat. no. 6291.0.55.003)
- Labour Force Survey Standard Errors, Data Cube (cat. no. 6298.0.55.001)
- Labour force, Australia - Rebenchmarked Estimates (cat. no. 6202.0.55.003)
- Labour Statistics: Concepts, Sources and Methods (cat. no. 6102.0.55.001)
- Australian Demographic Statistics (cat. no. 3101.0)
- Australian Labour Market Statistics (cat. no. 6105.0)
- Labour Force, Australia (cat. no. 6203.0)
- Information Paper: Outcomes of the Labour Household Surveys Content Review (cat. no. 6107.0)
- Information Paper: Questionnaires Used in the Labour Force Survey (cat. no. 6232.0)
- Information Paper: Regional Labour Force Statistics (cat. no. 6262.0)
- Information Paper: Labour Force Sample Design (cat. no. 6269.0)
- Information Paper: Forthcoming Changes to Labour Force Statistics (cat. no. 6292.0)
- Information Paper: Expansion of Hours Worked Estimates from the Labour Force Survey (cat. no. 6290.0.55.001)

**39** Current publications and other products released by the ABS are listed on the ABS website <<https://www.abs.gov.au>>. The ABS also issues a daily Release Advice on the website which details products to be released in the week ahead.

## DATA AVAILABLE ON REQUEST

**40** As well as the statistics included in this and related publications, the ABS may have other relevant data available. Inquiries should be made to the Labour Force contact officer on (02) 6252 6525, email <[labourforce@abs.gov.au](mailto:labourforce@abs.gov.au)> or to any ABS office.

## EFFECTS OF ROUNDING

**41** Estimates have been rounded and discrepancies may occur between sums of the component items and totals. Estimates of movement shown in this publication are obtained by taking the difference of unrounded estimates. The movement estimate is then rounded. Where a discrepancy occurs between the reported movement and the difference of the rounded estimates, the reported movement will be more accurate.

## SYMBOLS AND ABBREVIATIONS

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Symbol	Definition
'000	thousands
%	percentage
ABS	Australian Bureau of Statistics
CAI	computer assisted interviewing
cat. no.	catalogue number
Civ. pop.	civilian population
ERP	estimated resident population

Emp. to pop. ratio	employment to population ratio
f/t	full time
LFS	Labour Force Survey
NILF	not in the Labour Force
Part. rate	participation rate
p/t	part time
pts	percentage points
Seas adj.	seasonally adjusted
TAFE	Technical and Further Education
Unemp. rate	unemployment rate

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## Glossary

### GLOSSARY

#### Actively looked for work

Actively looked for work includes:

- written, telephoned or applied to an employer for work;
- had an interview with an employer for work;
- answered an advertisement for a job;
- checked or registered with an employment agency;
- taken steps to purchase or start your own business;
- advertised or tendered for work; and
- contacted friends or relatives in order to obtain work.

#### Actual hours of work

Actual hours of work refers to a specified reference period (e.g. a week) and includes:

- hours actually worked during normal periods of work;
- time spent in addition to hours worked during normal periods of work (including overtime);
- time spent at the place of work on activities such as the preparation of the workplace, repairs and maintenance, preparation and cleaning of tools, and the preparation of receipts, time sheets and reports;
- time spent at the place of work waiting or standing by due to machinery or process breakdown, accident, lack of supplies, power or internet access, etc;
- time corresponding to short rest periods (resting time) including tea and coffee breaks or prayer breaks;
- travel time connected to work (excluding commuting time); and
- training and skills enhancement related to the job or employer.

Excluded are:

- hours paid for but not worked, such as paid annual leave, public holidays or paid sick leave;
- meal breaks (e.g. lunch breaks);

- paid and unpaid time 'on call';
- time spent on travel to and from work when no productive activity for the job is performed (e.g. commuting time); and
- time off during working hours to attend outside educational activities, even if it is authorised, e.g. those not connected to the job or employer.

For multiple job holders the LFS collects a separate measure of actual hours worked in main job and in all jobs.

### **Attending full time education**

Persons aged 15-24 years enrolled at secondary or high school or enrolled as a full time student at a Technical and Further Education (TAFE) college, university, or other educational institution in the reference week.

### **Attending school**

Persons aged 15-19 years enrolled at secondary or high school in the reference week.

### **Attending tertiary educational institution full time**

Persons aged 15-24 years enrolled full time at a TAFE college, university, or other educational institution in the reference week, except those persons aged 15-19 years who were still attending school.

### **Civilian population aged 15 years and over**

All usual residents of Australia aged 15 years and over except members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.

### **Composite Estimation**

The estimation methodology used in the Labour Force Survey. Composite Estimation uses sample responses from nearby months as well as from the reference month to derive estimates for the reference month. This approach achieves gains in efficiency by exploiting the high similarity between the responses provided by the same respondent in previous months. For details see Information Paper: Forthcoming Changes to Labour Force Statistics, 2007 (cat. no. 6292.0).

### **Employed**

All persons aged 15 years and over who met one of the following criteria during the reference week:

- Worked for one hour or more for pay, profit, commission or payment in kind, in a job or business or on a farm (employees and owner managers of incorporated or unincorporated enterprises).
- Worked for one hour or more without pay in a family business or on a farm (contributing family workers).
- Were employees who had a job but were not at work and were:
  - away from work for less than four weeks up to the end of the reference week; or

- away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or
  - away from work as a standard work or shift arrangement; or
  - on strike or locked out; or
  - on workers' compensation and expected to return to their job.
- Were owner managers who had a job, business or farm, but were not at work.

### **Employed full-time**

Includes employed persons who usually worked 35 hours or more a week (in all jobs) and those who, although usually working less than 35 hours a week, worked 35 hours or more during the reference week.

### **Employed part-time**

Includes employed persons who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work in the reference week.

### **Employment to population ratio**

For any group, the number of employed persons expressed as a percentage of the civilian population in the same group.

### **Estimated resident population (ERP)**

Estimated resident population (ERP), is Australia's official measure of the population of Australia and is based on the concept of usual residence. It refers to all people, regardless of nationality, citizenship or legal status, who usually live in Australia, with the exception of foreign diplomatic personnel and their families. It includes usual residents who are overseas for fewer than 12 months. It excludes overseas visitors who are in Australia for fewer than 12 months. Refer to *Australian Demographic Statistics* (cat. no. 3101.0).

### **Flow estimates**

Flow estimates are a measure of activity over a given period. For example, monthly hours worked in all jobs is a measure of the total number of hours worked in a calendar month.

### **Gross flows**

The matching of respondents who report in consecutive months enables analysis of the transition of individuals between the different labour force status classifications, referred to as the matched sample. The transition counts between the different labour force status classifications from one point in time to the next are commonly referred to as gross flows.

The figures presented in gross flows are presented in original terms only and do not align with published labour force estimates. The gross flows figures are derived from the matched sample between consecutive months, which after taking account of the sample rotation and varying non-response in each month is approximately 80 percent of the sample.

Caution should be exercised when analysing these gross flows data due to:

- the figures presented sum to approximately 80 percent of the population values as the gross flows data are based on the matched sample only;

- there is no adjustment applied to account for changes due to seasonal patterns (referred to commonly as seasonal adjustment); and
- the estimates of relative sizes of each transition class are subject to bias due to the matched sample being a non-representative sample.

## **Labour force**

For any group, persons who were employed or unemployed, as defined.

## **Labour force status**

A classification of the civilian population aged 15 years and over into employed, unemployed or not in the labour force, as defined. The definitions conform closely to the international standard definitions adopted by the International Conferences of Labour Statisticians.

## **Long-term unemployed**

The number of persons unemployed for 52 weeks or over.

## **Long-term unemployment ratio**

The number of long-term unemployed persons, expressed as a percentage of the total unemployed population.

## **Market sector**

The market sector is an industry grouping comprising the following industries: Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas, water and waste services; Construction; Wholesale trade; Retail trade; Accommodation and food services; Transport, postal and warehousing; Information media and telecommunications; Finance and insurance services; Rental, hiring and real estate services; Professional, scientific and technical services; Administrative and support services; Arts and recreation services; and Other services. Refer to *Australian National Accounts: Concepts, Sources and Methods* (cat. no. 5216.0).

## **Non-market Sector**

The non-market sector is an industry grouping comprising the following industries: Education and training; Public administration & safety; and Health care and social assistance. Refer to *Australian National Accounts: Concepts, Sources and Methods* (cat. no. 5216.0)

## **Monthly hours worked in all jobs**

Monthly hours worked in all jobs measures the total number of actual hours worked by employed persons in a calendar month. It differs from the actual hours worked estimates (and the usual hours worked estimates) since these refer only to the hours worked in the reference week.

The methodology used to produce monthly hours worked in all jobs means that these are synthetic estimates. Seasonally adjusted and trend estimates of monthly hours worked in all jobs are available for the period July 1978 onwards.

Further information on the methodology used to produce the monthly hours worked in all



jobs estimates is available on the ABS website in Information Paper: Expansion of Hours Worked Estimates from the Labour Force Survey\_(cat. no. 6290.0.55.001).

Actual and usual hours worked cannot be aggregated across time to produce either quarterly or annual estimates as they relate to only a single week in the month. In contrast, monthly hours worked in all jobs estimates are a true monthly measure, and may be aggregated across time to produce both quarterly and annual estimates.

### **Not in labour force**

Persons who were not in the categories employed or unemployed, as defined. They include people who undertook unpaid household duties or other voluntary work only, were retired, voluntarily inactive and those permanently unable to work.

### **Participation rate**

For any group, the labour force expressed as a percentage of the civilian population aged 15 years and over in the same group.

### **Response rate**

The number of fully responding dwellings expressed as a percentage of the total number of dwellings excluding sample loss. Examples of sample loss include: dwellings where all persons are out of scope and/or coverage; vacant dwellings; dwellings under construction; dwellings converted to non-dwellings; derelict dwellings; and demolished dwellings.

### **Seasonally adjusted series**

A time series of estimates with the estimated effects of normal seasonal variation removed. See Explanatory Notes for more detail.

### **Stock estimates**

Stock estimates are a measure of certain attributes at a point in time and can be thought of as stocktakes. For example, the total number of employed persons is an account of the number of people who were considered employed in the Labour Force Survey reference week.

### **Trend series**

A smoothed seasonally adjusted series of estimates. See Explanatory Notes for more detail.

### **Underemployment rate (proportion of labour force)**

The number of underemployed workers expressed as a percentage of the labour force.

### **Underemployment ratio (proportion of employed)**

The number of underemployed workers expressed as a percentage of total employed persons.

### **Underemployed workers**

Employed persons aged 15 years and over who want, and are available for, more hours of work than they currently have. They comprise:

- persons employed part time who want to work more hours and are available to start work with more hours, either in the reference week or in the four weeks subsequent to the survey; or
- persons employed full time who worked part time hours in the reference week for economic reasons (such as being stood down or insufficient work being available). It is assumed that these people wanted to work full time in the reference week and would have been available to do so.

### **Underutilisation rate**

The sum of the number of persons unemployed and the number of persons in underemployment, expressed as a proportion of the labour force.

### **Unemployed**

Persons aged 15 years and over who were not employed during the reference week, and:

- had actively looked for full time or part time work at any time in the four weeks up to the end of the reference week and were available for work in the reference week; or
- were waiting to start a new job within four weeks from the end of the reference week and could have started in the reference week if the job had been available then.

### **Unemployed looked for full time work**

Unemployed persons who:

- actively looked for full time work; or
- were waiting to start a new full time job.

### **Unemployed looked for only part time work**

Unemployed persons who:

- actively looked for part time work only; or
- were waiting to start a new part time job.

### **Unemployment rate**

For any group, the number of unemployed persons expressed as a percentage of the labour force in the same group.

### **Usual hours of work**

Usual hours of work refers to a typical period rather than the hours worked in a specified reference period. The concept of usual hours applies both to persons at work and to persons temporarily absent from work, and is defined as the hours worked during a typical week or day. Actual hours worked (for a specific reference period) may differ from usual hours worked due to illness, vacation, strike, overtime work, a change of job, or similar reasons.

# What If

## WHAT IF...? REVISIONS TO TREND ESTIMATES

### EFFECT OF NEW SEASONALLY ADJUSTED ESTIMATES ON TREND ESTIMATES

#### TREND REVISIONS

Each time new seasonally adjusted estimates become available, trend estimates are revised. This revision is a combined result of the concurrent seasonal adjustment process and the application of surrogates of the Henderson average to the seasonally adjusted series (see paragraphs 28 to 37 of the Explanatory Notes).

The examples in the tables below show two illustrative scenarios and the consequent revisions to previous trend estimates of employment and the unemployment rate. The revisions in the scenarios are due to the use of surrogates of the Henderson average, as the impact of revision of seasonally adjusted estimates can not be estimated in advance.

**1** The January 2018 seasonally adjusted estimate is **higher** than December 2017 by:

- 0.22% for employment
- 2.26% for the unemployment rate

**2** The January 2018 seasonally adjusted estimate is **lower** than December 2017 by:

- 0.22% for employment
- 2.26% for the unemployment rate

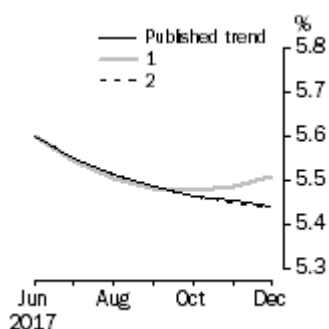
The percentage changes of 0.22% and 2.26% represent the average absolute monthly percentage changes in employment and the unemployment rate respectively. Estimates in the graphs have been calculated using unrounded estimates, and may be different from, but more accurate than, rounded estimates depicted in the corresponding table.

#### Employment



WHAT IF NEXT MONTH'S SEASONALLY ADJUSTED ESTIMATE IS:			
Trend as published		(1) 12 468.1 i.e. rises by 0.22%	(2) 12 413.4 i.e. falls by 0.22%
<hr/>			
2017			
September	12 333.2	12 332.9	12 333.8
October	12 365.2	12 366.3	12 363.8
November	12 394.8	12 399.2	12 391.1
December	12 419.8	12 429.5	12 414.3
<hr/>			

#### Unemployment Rate



WHAT IF NEXT MONTH'S SEASONALLY ADJUSTED ESTIMATE IS:			
	Trend as published	(1) 5.7 i.e. rises by 2.26%	(2) 5.4 i.e. falls by 2.26%
2017			
September	5.5	5.5	5.5
October	5.5	5.5	5.5
November	5.5	5.5	5.4
December	5.4	5.5	5.4

## Data Cubes (I-Note) - Data Cubes

The simultaneous introduction of two rotation groups per month between May and August 2013 will result in a lower proportion of the sample being matched during this period. In June 2013, the new sample for the more remote, less populated areas and non-private dwellings were introduced for Tasmania, Northern Territory and the Australian Capital Territory. The new sample in these areas in New South Wales, Victoria, Queensland, South Australia and Western Australia were introduced in July 2013. These are reflected in smaller estimates in the gross flow.

## Time Series Spreadsheet (I-Note) - Time Series Spreadsheet

Seasonal adjustment processes have resulted in minor discrepancies between seasonally adjusted and trend data across tables containing monthly headline estimates and those containing quarterly underutilisation data. Data for total employed and unemployed persons is published in seasonally adjusted and trend terms within the spreadsheet tables containing quarterly underutilisation data. Estimates of seasonally adjusted and trend employed and unemployed persons in these tables are different to those published in tables containing headline monthly estimates for Australia, as one is based on data being seasonally adjusted and trended quarterly (consistent with underutilisation data), while other monthly headline estimates are based on data being seasonally adjusted and trended monthly.

## Time Series Spreadsheet (I-Note) - Time Series Spreadsheet

Seasonal adjustment processes have resulted in minor discrepancies between seasonally adjusted and trend data across tables containing monthly headline estimates and those containing quarterly underutilisation data. Data for total employed and unemployed persons is published in seasonally adjusted and trend terms within the spreadsheet tables containing quarterly underutilisation data. Estimates of seasonally adjusted and trend employed and unemployed persons in these tables are different to those published in tables containing

headline monthly estimates for Australia, as one is based on data being seasonally adjusted and trended quarterly (consistent with underutilisation data), while other monthly headline estimates are based on data being seasonally adjusted and trended monthly.

# Standard Errors

## STANDARD ERRORS

### STANDARD ERRORS

The estimates in this publication are based on information gained from the occupants of a sample survey of dwellings. Because the entire population is not surveyed, the published original, seasonally adjusted and trend estimates are subject to sampling error. The most common way of quantifying such sampling error is to calculate the standard error for the published estimate or statistic. For more information, see paragraphs 25 to 27 of the Explanatory Notes.

### LEVEL ESTIMATES

To illustrate, let us say the published level estimate for employed persons aged 15-19 years is 700,000 and the associated standard error is 9,000. The standard error is then used to interpret the level estimate of 700,000. For instance, the standard error of 9,000 indicates that:

- There are approximately two chances in three that the real value falls within the range 691,000 to 709,000 (700,000 + or - 9,000)
- There are approximately nineteen chances in twenty that the real value falls within the range 682,000 to 718,000 (700,000 + or - 18,000).

The real value in this case is the result we would obtain if we could enumerate the total population.

The following table shows the standard errors for this month's level estimates.

AUSTRALIA												
NSW Vic. Qld SA WA Tas. NT ACT MalesFemalesPersons												
Aged 15 years and over												
Employed												
Full time	'000	26.2	19.4	17.6	7.5	11.2	2.9	2.4	2.9	32.5	24.4	39.5
Part time	'000	18.9	12.8	12.1	5.7	8.5	2.3	0.8	2.1	14.1	22.2	27.4
Total	'000	28.6	23.8	20.2	8.7	12.4	3.5	2.9	3.1	35.5	33.7	44.7
Unemployed												
Looking for f/t work	'000	8.9	7.8	8.1	2.9	4.6	1.1	0.8	1.1	11.8	9.6	15.4
Looking for p/t work	'000	5.1	6.3	4.7	2.2	3.1	0.8	0.4	0.6	6.7	7.5	10.2
Total	'000	10.4	10.1	9.0	3.5	5.6	1.4	1.0	1.2	13.7	12.3	18.6
Labour force	'000	28.9	24.6	20.6	8.9	12.6	3.5	3.0	3.1	36.4	34.5	45.4
Not in labour force	'000	24.3	21.2	22.6	8.2	11.8	3.5	2.9	3.1	31.1	35.6	42.2
Unemployment rate												
Looking for f/t work	pts	0.3	0.3	0.4	0.5	0.5	0.7	0.7	0.6	0.2	0.3	0.2
Looking for p/t work	pts	0.4	0.5	0.6	0.7	0.7	0.8	1.2	0.9	0.5	0.3	0.2
Total	pts	0.2	0.3	0.3	0.4	0.4	0.5	0.7	0.5	0.2	0.2	0.1

Participation rate	pts	0.4	0.5	0.5	0.6	0.6	0.8	1.6	0.9	0.4	0.3	0.2
Aged 15-19 years												
Employed												
Full time	'000	4.2	2.0	2.8	1.1	1.6	0.5	0.2	0.4	4.9	3.9	5.7
Part time	'000	5.8	3.7	4.3	1.8	2.4	0.7	0.2	0.8	6.3	7.3	9.3
Total	'000	6.9	4.0	5.1	2.0	2.8	0.9	0.3	0.9	7.5	7.9	10.6
Unemployed												
Looking for f/t work	'000	2.9	2.9	3.7	0.9	1.6	0.4	0.3	0.4	4.5	3.6	5.8
Looking for p/t work	'000	2.9	3.6	2.9	1.3	2.1	0.5	0.3	0.4	4.6	4.2	6.3
Total	'000	4.2	4.8	4.8	1.6	2.7	0.7	0.4	0.5	6.5	5.6	8.6
Labour force	'000	7.5	4.7	5.8	2.2	3.2	1.0	0.3	0.9	8.4	8.5	11.8
Not in labour force	'000	9.2	5.7	7.0	2.8	4.1	0.9	0.6	1.2	10.2	9.5	14.2
Unemployment rate												
Looking for f/t work	pts	3.3	5.9	5.1	6.6	6.2	6.8	7.9	11.5	2.7	3.8	2.2
Looking for p/t work	pts	1.7	2.2	2.1	2.8	3.4	3.6	5.0	3.4	1.7	1.2	1.0
Total	pts	1.6	2.3	2.3	2.7	3.0	3.2	4.3	3.7	1.5	1.3	1.0
Participation rate	pts	1.6	1.2	1.8	2.2	2.1	3.1	2.1	3.9	1.1	1.2	0.8
Unemployment to population ratio - looking for f/t work	pts	0.6	0.8	1.2	0.9	1.1	1.4	1.7	1.6	0.6	0.5	0.4

## MOVEMENT ESTIMATES

The following example illustrates how to use the standard error to interpret a movement estimate. Let us say that one month the published level estimate for females employed part-time in Australia is 1,890,000; the next month the published level estimate is 1,900,000 and the associated standard error for the movement estimate is 11,900. The standard error is then used to interpret the published movement estimate of 10,000. For instance, the standard error of 11,900 indicates that:

- There are approximately two chances in three that the real movement between the two months falls within the range - 1,900 to 21,900 (10,000 + or - 11,900)
- There are approximately nineteen chances in twenty that the real movement falls within the range - 13,800 to 33,800 (10,000 + or - 23,800).

The following table shows the standard errors for this month's movement estimates.

AUSTRALIA												
NSW Vic. Qld SA WA Tas. NT ACT Males Females Persons												
Aged 15 years and over												
Employed												
Full time	'000	15.5	12.8	9.6	3.9	6.5	1.7	1.8	1.9	18.9	14.3	24.3
Part time	'000	10.0	8.7	6.1	2.9	4.4	1.4	0.9	1.2	8.9	13.2	15.8
Total	'000	18.7	15.7	13.4	5.7	8.6	2.3	2.0	2.2	21.0	19.7	30.1
Unemployed												
Looking for f/t work	'000	9.0	7.7	7.5	3.1	5.0	1.1	0.8	1.2	11.7	9.6	15.3
Looking for p/t work	'000	5.2	6.2	4.1	2.2	3.3	0.8	0.4	0.8	6.7	7.5	10.1
Total	'000	10.6	10.0	8.7	3.7	6.0	1.3	0.9	1.3	13.6	12.2	18.6
Labour force	'000	19.2	16.3	14.2	6.1	9.0	2.3	2.1	2.3	21.7	20.3	31.1
Not in labour force	'000	18.2	15.4	13.9	5.9	8.7	2.2	2.0	2.3	18.3	22.0	29.7
Unemployment rate												
Looking for f/t work	pts	0.3	0.3	0.5	0.5	0.5	0.7	0.8	0.6	0.2	0.3	0.2
Looking for p/t work	pts	0.4	0.6	0.6	0.7	0.7	0.7	1.2	1.0	0.5	0.3	0.3
Total	pts	0.3	0.3	0.4	0.4	0.4	0.5	0.7	0.5	0.2	0.2	0.1
Participation rate	pts	0.3	0.3	0.4	0.4	0.4	0.5	1.1	0.7	0.2	0.2	0.2
Aged 15-19 years												
Employed												
Full time	'000	2.8	1.8	1.8	0.7	1.2	0.4	0.3	0.3	3.5	2.8	4.0

Part time	'000	3.9	3.4	2.7	1.3	1.8	0.6	0.4	0.6	4.3	4.9	6.1
Total	'000	4.6	3.6	3.1	1.4	2.0	0.6	0.5	0.6	5.1	5.3	6.9
Unemployed												
Looking for f/t work	'000	3.0	2.9	3.3	1.1	1.7	0.4	0.3	0.4	4.6	3.6	5.8
Looking for p/t work	'000	3.1	3.6	2.6	1.3	2.3	0.5	0.3	0.5	4.6	4.3	6.3
Total	'000	4.3	4.7	4.3	1.6	2.9	0.7	0.5	0.6	6.5	5.6	8.6
Labour force	'000	4.9	4.1	3.4	1.5	2.2	0.7	0.5	0.6	5.6	5.7	7.6
Not in labour force	'000	5.9	4.9	3.7	1.9	2.9	0.7	0.8	0.7	6.9	6.6	9.2
Unemployment rate												
Looking for f/t work	pts	3.9	6.2	5.7	8.5	7.6	8.0	8.0	12.2	3.0	4.5	2.5
Looking for p/t work	pts	1.8	2.3	2.2	3.1	3.5	3.4	4.9	4.1	1.8	1.3	1.1
Total	pts	1.8	2.3	2.4	3.2	3.3	3.3	4.3	4.0	1.6	1.3	1.0
Participation rate	pts	1.0	1.1	1.1	1.4	1.4	2.1	3.5	2.7	0.7	0.8	0.5
Unemployment to population ratio - looking for f/t work	pts	0.6	0.8	1.0	1.1	1.1	1.4	1.8	1.7	0.6	0.5	0.4

## Quality Declaration - Summary

### QUALITY DECLARATION - SUMMARY

#### INSTITUTIONAL ENVIRONMENT

Labour Force statistics are compiled from the Labour Force Survey which is conducted each month throughout Australia as part of the Australian Bureau of Statistics (ABS) household survey program. For information on the institutional environment of the Australian Bureau of Statistics (ABS), including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment.

#### RELEVANCE

The Labour Force Survey provides monthly information about the labour market activity of Australia's resident civilian population aged 15 years and over. The Labour Force Survey is designed to primarily provide estimates of employment and unemployment for the whole of Australia and, secondarily, for each state and territory.

#### TIMELINESS

The Labour Force Survey enumeration begins on the Sunday between the 5th and 11th of the month, except for the Christmas and New Year holiday period. In December enumerations starts between the 3rd and 9th (4 weeks after November enumeration begins). In January enumeration starts between the 7th and 13th (5 weeks after December enumeration begins).

Key estimates from the Labour Force Survey are published in two stages. The first, *Labour Force, Australia* (cat. no. 6202.0), is released 39 days after the commencement of enumeration for the month, with the exception of estimates for December which are published 46 days after the commencement of enumeration.

The second stage includes detailed data that were not part of the first stage and are published in *Labour Force, Australia, Detailed - Electronic Delivery* (cat. no. 6291.0.55.001) and *Labour Force, Australia, Detailed, Quarterly* (cat. no. 6291.0.55.003). The second stage is released 7 days after the first stage.

## ACCURACY

The Labour Force Survey is based on a sample of private dwellings (approximately 26,000 houses, flats etc) and non-private dwellings, such as hotels and motels. The sample covers about 0.32% of the Australian civilian population aged 15 years or over. The Labour Force Survey is designed primarily to provide estimates of key labour force statistics for the whole of Australia and, secondarily, for each state and territory.

Two types of error are possible in an estimate based on a sample survey: non-sampling error and sampling error.

Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Australian Labour Force Survey receives a higher level of co-operation from individuals in selected dwellings compared to other countries, with the average response rate over the past 3 years being 93.25 per cent, and the average rate over the past year being 92.5 per cent (to the nearest quarter of a per cent, in rounded terms). See Glossary for definition of response rate.

Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors.

Standard errors of key estimates and movements since the previous month are available in *Labour Force, Australia* (cat. no. 6202.0). The standard error of other estimates and movements may be calculated by using the spreadsheet contained in *Labour Force Survey Standard Errors, Data Cube* (cat. no. 6298.0.55.001).

## COHERENCE

The ABS has been conducting the Labour Force Survey each month since February 1978. While seeking to provide a high degree of consistency and comparability over time by minimising changes to the survey, sound survey practice requires careful and continuing maintenance and development to maintain the integrity of the data and the efficiency of the collection.

The changes which have been made to the Labour Force Survey have included changes in sampling methods, estimation methods, concepts, data item definitions, classifications, and time series analysis techniques. In introducing these changes the ABS has generally revised previous estimates to ensure consistency and coherence with current estimates. For a full list of changes made to the Labour Force Survey see Chapter 20 in *Labour Statistics: Concepts, Sources and Methods* (cat. no. 6102.0.55.001).



## INTERPRETABILITY

The ABS has been conducting the Labour Force Survey each month since February 1978. While seeking to provide a high degree of consistency and comparability over time by minimising changes to the survey, sound survey practice requires careful and continuing maintenance and development to maintain the integrity of the data and the efficiency of the collection.

The changes which have been made to the Labour Force Survey have included changes in sampling methods, estimation methods, concepts, data item definitions, classifications, and time series analysis techniques. In introducing these changes the ABS has generally revised previous estimates to ensure consistency and coherence with current estimates. For a full list of changes made to the Labour Force Survey see Chapter 20 in *Labour Statistics: Concepts, Sources and Methods* (cat. no. 6102.0.55.001).

## ACCESSIBILITY

Please see the Related Information tab for the list of products that are available from this collection.

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